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Information Management and Computing at the University of Virginia Health Sciences Center Volume 5, Number 3

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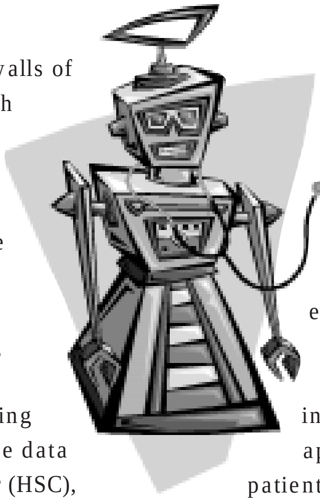
New Technology Means Better Healthcare: Will Computers Outmode Doctors?



A yellow robot caged by walls of data, rolls back and forth along its tracks. It reaches out its metal fingers to select magnetic tapes requested from sites around the U.Va. Health Sciences Center-scanned images of patient records, laboratory tests, billing and insurance information.

It used to take a whole building full of the computers to store the data of U.Va. Health Sciences Center (HSC), back when huge water pipes were part of the database's cooling system. Today, the gray basement of Stacey Hall houses their electric hum. The mainframe installed 18 years ago was the size of a room; it is now as big as a refrigerator. Advancements in technology are gradually streamlining the computer systems at the HSC. The next step, over the next four or five years, is the installation of a state-of-the-art Integrated Healthcare Management System (IHMS).

The project, if approved by the Board of Visitors, will revolutionize the way you receive healthcare by combining the information of customized, independent computer systems currently in use into an integrated (or compatible) system - enabling faster, more accurate data entry, storage and retrieval. The envisioned system includes several improvements over the current systems, and patients will reap many benefits from the increased efficiency. Scheduling appointments will be easier and patients will have to fill out fewer forms. Doctors will be more informed of both the patient's personal history and new developments in medicine. Computers will have automatic alerts to inform the doctor of any allergies or needs for a check-up.

The Paper Maze

The system will create an on-line patient record, making hundreds of thousands of paper records obsolete. Today, most doctors rely on paper charts, even though some medical records are already on-line and only

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INFORMATION

University of Virginia
Health Sciences Center

EDITOR
Gabriel R. Rios

GRAPHIC ARTIST
Tom Bellucci

EDITORIAL ADVISORS
Sara Arneson, Gretchen Naisawald Arnold, Armando Bolmey, Stephen Borowitz, Bill Detmer, Cheryl Jones, Bill Pearson, Janet Sakell, Steve Stearns, Linda Watson

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Please direct comments, questions, or subscription requests to:
Phone: 804-924-0051
TDD: 804-982-HEAR
E-mail: inside.info@virginia.edu
Inside Information is available in electronic format:
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one paper copy exists of each. Paper charts are sometimes difficult to obtain and the average 1 1/4-inch record is not easily photocopied. The new system will allow increased accessibility and simultaneous viewing of records, thus enabling collaboration among experts at a great physical distance. More accessible data will improve the coordination of times available for scheduling when patients (or a referring physician) call to schedule an appointment. Essential information required for an appointment, particularly regarding insurance, will be more accessible to the healthcare provider. The more efficient system will reduce redundant data entry (those pesky forms we fill out over and over again with the same information) and allow doctors to see more patients in less time.

Data Entry

The current, less efficient process of data entry requires the doctor to pick up a phone to dictate the results of an examination or surgical procedure. The recording is later typed into the computer by staff. In contrast, the new system will save time for patients and doctors by using technological tools to enter data. Computers will soon assist doctors with handwriting and voice recognition systems that will transcribe dictation - saving time, money and paper. Clinicians will use handheld devices to write medical information on the computer screen, much like a mouse used as a pen. The computer will convert the handwriting into typed text and the data will be immediately entered into the database. Potentially, clinicians will be able to transcribe data without even lifting a finger. The use of voice recognition technology may become more widespread if it proves efficient and accurate. The wireless technology will enable clinicians to instantaneously add or update patient documentation from any Internet-accessible user workstation.

Diagnostics, Statistics, and Research

During a patient's examination, the new system will link doctors to expert systems. Clinical and research information will be just a mouse click away - improving decision making when doctors order diagnostic tests and medicine. The Health Sciences Library already has Stat Ref!, Harrison's and SAM Online which include 35 different textbooks - with illustrations, graphics, charts, and links offering vital statistics - but the new system will expand the number of specific databases. Databases are updated regularly and offer the latest clinical trials information. The National Institute of Health's MEDLINE database, for example, offers the latest research and will be at the fingertips of physicians as well as instructors, students and researchers.

The current system automatically orders drugs and tests and receives test results back again, but the process will be improved. An automatic alert will decrease the likelihood of duplicate test orders, which sometimes occur if patient records are not readily available. If test results are abnormal, doctors can be paged with the vital information - they won't need computer-access. Patients will spend less time worrying about results and will be treated more efficiently. If a patient's personal auto alert malfunctions - she forgets to inform the doctor of an allergy - the computer will remind the doctor and stop any order of unsuitable medication. Potentially, a patient getting dental care could be notified that they are overdue for a vaccine or a pap smear. One day the system might be modified to automatically send healthcare reminders to patients at home.

The new system will give essential analysis of trends in healthcare at the HSC. The Center sees approximately 400,000 outpatients in a year, and electronic format is the only efficient way to evaluate the inordinate amount of data. Doctors will be able to review the rate of recovery as an outcome of certain procedures, and decide what methods are working best within the hospital. They will identify the number of patients admitted for certain symptoms and see if education programs are making a difference.

Doctorless Healthcare System?

Disadvantages exist with any new system. The on-line patient record, for example, has many worried about confidentiality. Consequently, HCFA, a healthcare financing institution of the government, has released a policy on Internet security. But the HSC is concerned with information security regardless of the mandate, Hal Scott, CIO for U.Va. Healthcare Systems, says. The electronic system will actually be more secure than a paper-based one since it can restrict access and record who sees what and when, he says. Will patients soon be treated by computers, not doctors? HSC does not intend for "interactive" technology to become an oxymoron. According to Scott, the new tools are "certainly not designed to replace physicians, only to help them." Use of technology will vary with each doctor- some may choose to be on-line during examinations, others will continue practicing medicine as they have in the past. Regarding the possibility of computers in every room, Agnes Frankfurter, Manager of Clinical Systems for the UVA Health System, believes "Anything is possible...I'm sure there will be a population that will want computers everywhere, but another population won't." Some patients may not even notice the new technology, she says. "The important thing is to understand that the technology is being used to provide better care, by both capturing data and making data accessible to the clinician wherever and whenever care is provided," Frankfurter says. The UVa Medical Center was recently recognized as one of the nation's 100 top hospitals, and one of the top 15 major teaching hospitals, in a study conducted by HCIA Inc. and reported each year in Modern Healthcare, a weekly business news magazine. As we approach the twenty-first century, the UVa Health Sciences Center is taking the initiative to ensure it offers the finest healthcare program of any in the nation. ■

This story was contributed by Eleanor May Stables, a second year English Major in the College of Arts and Sciences.

> *"The important thing is to understand that the technology is being used to provide better care, by both capturing data and making data accessible to the clinician wherever and whenever care is provided."*

Final 1998/99 History of the Health Sciences Lecture Series Presentation

Wednesday, 28 April 1999, 5 to 6 p.m.

Camp Heart Center Auditorium

Robert M. Carey, MD, James Carroll Flippin Professor of Medical Science and Dean of the University of Virginia School of Medicine, and Archibald Craige, Esq.

"Dr. John Lederer and Early American Exploration"

Third Annual Kenneth R. Crispell Memorial History Lecture

All lectures are open to the public.

The History of the Health Sciences Lecture Series is sponsored each year by The Claude Moore Health Sciences Library and the University of Virginia School of Medicine Continuing Medical Education Program as an educational service for the University of Virginia Health Sciences Center and interested citizens in the community. The Library hopes that the speakers and topics selected will promote a greater understanding of the historical and philosophical underpinnings of today's health care disciplines.

The generous support of friends, faculty, and alumni of the University of Virginia Health Sciences Center provide funding for the Lecture Series.

To be added to the History of the Health Sciences Lecture Series mailing list, please contact Joan Echtenkamp Klein, assistant director for Historical Collections and Services, The Claude Moore Health Sciences Library, #234, University of Virginia Health Sciences Center, Charlottesville VA 22908; or by telephone at (804) 924-0052; fax at (804) 924-0379; e-mail at jre@virginia.edu. Information about Historical Collections and Services programs, including exhibits and lectures, may be found by visiting **http://www.med.virginia.edu/hs-library/historical/**

Evaluating Health Information on the Internet

The evaluation of health information on the Internet is a troublesome problem, often addressed by “rating” schemes, which attempt to rate and make public the quality of health information sources. Apart from subjective or expert opinion, there are efforts at developing objective criteria for evaluating the content of medical information on the Internet.

While no one organization oversees the quality of health information on the Internet, several are striving to establish guidelines to assist authors in providing quality content. The Health Information Technology Institute of Miretek Systems established the **Health Summit Working Group Policy Paper** (**http://hitiweb.mitretek.org/hswg/documents/default.asp**) to address the need for unbiased, reproducible, widely accepted criteria that can be used to evaluate the Internet. The Group developed seven major criteria for evaluating health information on the Internet. The criteria are designed to serve as a basis for decision making and tool development. The criteria include: Credibility, Content, Disclosure, Links, Design, Interactivity, and Caveats.

Another organization attempting to establish quality standards on the Internet is the **Health on the Net Foundation.** The Foundation has developed the **Code of Conduct (HONcode)** for medical and health Web sites (**http://www.hon.ch/HONcode/Conduct.html/**). The Code addresses the issues of reliability and credibility of medical and health information. Specific concerns included the validity of research data, the quality of medical advice provided on certain Web sites, as well as the lack of scientific references to back up claims related to treatments available commercially. The HONcode includes principles comprised of the following ethical aspects:

- The author’s credentials
- The date of the last modification with respect to clinical documents
- Confidentiality of data
- Source data reference
- Funding and advertising policy

We have given you a couple of guideposts to help in your search for quality information. In the end, no one but you can determine the quality and appropriateness of the networked information. The following are detailed checklists that provide further assistance in your search for quality information.

Beck, Susan E. *The Good, The Bad & The Ugly: or, Why It’s a Good Idea to Evaluate Web Sources.* New Mexico State University Library. Available: **http://lib.nmsu.edu/staff/susabeck/evalcrit.html**. 1997.

Jadad, AR and Gagliardi, A. “Rating Health Information on the Internet: Navigating to Knowledge or to Babel?” *JAMA* 279: (1998). 611-614. Online.
Available: **http://www.ama-assn.org/sci-pubs/journals/archive/jama/vol_279/no_8/rv71042a.htm**.

OMNI. *OMNI Guidelines for Resource Evaluation*. OMNI. Available: **http://omni.ac.uk/agec/evalguid.html**. 1997.

Snow, Bonnie. “Internet Sources of Information on Alternative Medicine.” *Database* 21. 4 (1998). Online. Available: **http://www.onlineinc.com/database/DB1998/snow8.html**. Useful discussion on evaluation criteria for sources in alternative medicine.

Wyatt, Jeremy C. “Measuring quality and impact of the World Wide Web.” BMJ 7098. (1997): 314. Online. Available. **http://www.bmj.com/archive/7098ip2.htm**.

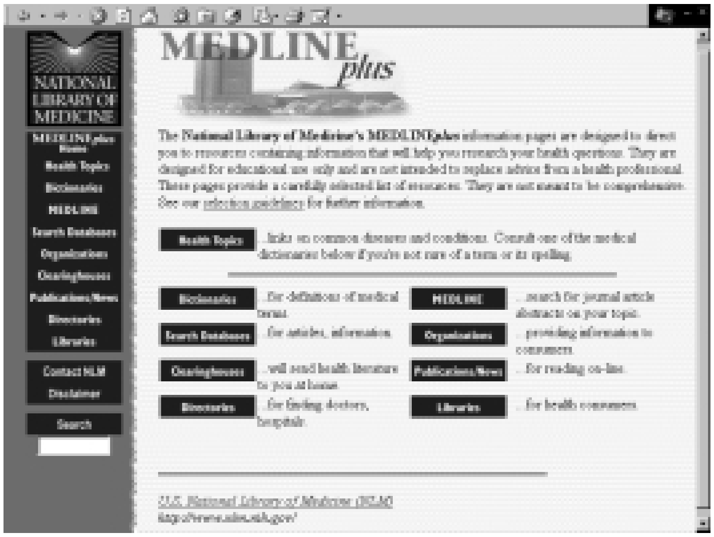
MEDLINEplus: A Consumer Resource to Quality Health Information on the Internet

Not long ago, consumers had a difficult time finding information that answered their health related questions. With the advent of the World Wide Web, access became much easier and faster. Unfortunately, ease of access does not necessarily mean quality, as any retrieval from Yahoo or other search engine will prove. To alleviate this problem, the National Library of Medicine (NLM) has recently introduced MEDLINEplus, a directory of health web pages geared toward the layperson. You can access MEDLINEplus at:

http://www.nlm.nih.gov/medlineplus/

MEDLINEplus is not meant to be a comprehensive listing of all health related materials, but is a tool that has weeded out irrelevant websites. The information provided is reviewed and compiled by NLM staff to allow quick passage to accurate and authoritative information of significant quality. Ongoing review of new and existing sites maintains the quality of the website. To avoid annoying ads with flashy detail, web pages that are selling a product or service are excluded.

What does MEDLINEplus provide? With point and click ease, access is available to a variety of "dictionaries" that provide definitions for medical terms. The dictionaries can assist a patient consulting "Health Topics," a section that links to information on common diseases and conditions. This area includes many pre-run literature searches on popular topics. To locate even more information, there is a listing of "organizations" that have a focus on education and "clearinghouses" whose mission is to mail health literature to requestors. "Publications/News" includes full-text magazines, newsletters, books, governmental publications, and groundbreaking information from current news sources. There are directories to assist in locating doctors and hospitals as well as a listing of libraries that provide consumer health information. Numerous databases are listed including the Department of Health and Human Services HealthFinder, the InteliHealth USP Drug Database, and the USDA's Nutrition database, to name a few. Access to NLM's premier database, MEDLINE, is provided using the PubMed search software. ■



Library Renovation Update

Construction is expected to begin this month on the expansion and renovation of the Health Sciences Library. The 18 month long project will occur in phases. Following are our best estimates of what will happen during Phase I (April through September) which consists of development of the Library's existing basement for the Historical Collections and for Collection Services staff.

April - June

- Contractor staging area set up next to Library on Lane Road side
- Library loading dock area closed; all Library deliveries made through entries on first and second floors
- Periodic noise as core drilling occurs
- Brief disruption in Microcomputer Lab as floor penetrations are drilled and a new telecommunications closet is built
- Reduced access to Historical Collections as books and journals are packed for the move to new space

July - September

- Book collection moved to Cabell Room
- AV collection moved to Journal Room
- Reference collection moved to Journal Room
- Loose/current journals integrated with bound volumes in Journal Room

The Library's website [**http://www.med.virginia.edu/hs-library/admin/building.html**] should be checked frequently for the latest updates. Questions or concerns should be directed to Linda Watson, Library Director at 924-0187 or law6z@virginia.edu. ■

Tools of the Trade

Off Campus Access to Full-Text Resources Coming This Spring

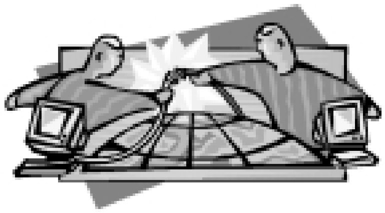
In the Library, access to full-text books and journals is a straightforward matter with no requirement that you identify yourself. From home, you are required to identify yourself as a member of the University of Virginia community due to the licensing restrictions of these resources. Currently, if you attempt to get access by going through a commercial Internet service provider (ISP), such as Cornerstone or AOL, you will be denied. A message may appear telling you that you do not have access to these resources or you may be asked to input a login id and password.

ITC is currently investigating **proxy server** technology to assist the UVa community with access to IP verified resources. A proxy server will eliminate the cumbersome process of distributing passwords and user names to individual users for each full-text resource. One password will be set up to access all UVa licensed full-text resources and any other IP verified resources at UVa. Not only is it often more convenient for library users to access full-text resources from their homes, but - in the case of distance education students and preceptors - it may be the only means of access. In addition to the resources available via the Health Sciences Library web pages, users will be able to access full-text resources and databases via other University of Virginia Libraries **http://www.lib.virginia.edu/indexes/authent.html**.

How will this work?

1. Users must setup a proxy account via ITC's web page **http://www.itc.virginia.edu/**. This is a different user id and password from your e-mail account.
2. Users must then configure their web browser to use the UVa proxy server. The address for the server will be posted on the ITC's web site at **http://www.itc.virginia.edu/department/org/rsc3e/proxy/menu.html**.
3. When users select a link on the library web site for a particular full-text resource, the UVa proxy server steps in and asks for the user's id and password.
4. UVa's proxy server approves the transaction based on information from the "whois" database and connects the user to the resource.
5. The publisher's computer checks to see where the user is coming from. Since UVa's proxy server has "proxied" the transaction, the proxy server address is used by the database rather than the user's own ISP's address and so the database grants access.

This service will work with both Netscape Navigator and Internet Explorer. Instructions on how to configure web browsers and more information about the proxy server will be available on the ITC web site at: **http://www.itc.virginia.edu/department/org/rsc3e/proxy/menu.html**. As always, help is available from the library staff for those who encounter unusual problems in configuring their browsers and accessing the proxy server. The proxy server is being tested now and hopefully will be available for general use this Spring. For more information contact the Health Sciences Library Information Services Department at hslref@virginia.edu or 924-5591. ■



Double Click

People, events, and news in informatics

Claude Moore Health Sciences Library

Circulation	924-5444
Reference Desk	924-5591
Learning Resources Center	924-5521
Administration	924-5464

Library Hours:

Mon-Thurs	7:30am -12am
Friday	7:30am - 7pm
Saturday	9am - 7pm
Sunday	9am -12am

Extended Hours:

May
May 7th and 8th
(Friday and Saturday)
May 28th and 29th
(Friday and Saturday)

Medical Center Computing

Help Desk	924-5334

ITC-Academic Computing Health Sciences

Information	982-4025

Information Technology & Communication

Help Desk	924-3731

Judy Shotwell

The Library recently said goodbye to **Judy Shotwell**, Administrative Assistant, who was the Library's Administrative Manager for 22 years. **Susan Thacker**, Document Delivery Specialist, departed to work at State Farm Insurance. Ian Brill, Microcomputer Support Technician, transferred to ITC.

We'd like to say hello to three super people and great new employees: **Keith Fisher**, Circulation Specialist, **Wendy Aielli**, Administrative Assistant, and **Samantha Smith**, Document Delivery Specialist.

Upcoming Meetings of Note:

The **American Medical Informatics Association (AMIA)** is holding its Spring Congress in Chicago, IL from May 25 - 27, 1999. The focus of this year's congress, health informatics education, is timely. With an ever increasing use of information technology in all facets of health care, demand for health professionals and administrators with informatics training is on the rise.

The **American Society for Information Science (ASIS)** is hosting its Mid-Year Meeting in Pasadena, California from May 24 - 26, 1999. The conference theme is Evaluating and Using Networked Information Resources and Services. ■

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